Texas Water Development Board

VERSION 1.1
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Guidelines for Regional Water Planning Data Deliverables (2011-2016)

Texas Water Development Board

Contents

Introduction

The Texas Legislature directed the Texas Water Development Board (TWDB) to establish standards for reports and data presented in regional water plans. Section 16.053(d) of the Texas Water Code states: "The board shall provide guidelines for the format in which information shall be presented in the Regional Water Plans." This document, along with 31 Texas Administrative Code (TAC) §357, provides data reporting and formatting specifications for

regional water planning groups (RWPGs) to follow when submitting electronic data to the TWDB including submitting data into the Regional Water Planning Application (DB17). It serves as a companion document to the *"General Guidelines for Regional Water Plan Development (2011-2016)."* ***If there is a conflict in the guidance between the two documents, the "General Guidelines for Regional Water Plan Development (2011-2016)" takes precedence over this document.***

The remainder of this document provides more detailed guidance as to how each RWPG should report data to the TWDB. This includes general data reporting and data reporting through DB17.

The information listed in the following sections is final. Please be aware, though, that additional information may be added as the DB17 application is developed.

- Section 1 discusses general data requirements and expectations, including, but not limited to, data submitted through DB17
- Section 2 details the general format for reporting electronic data, including file and software types. This also includes, but is not limited to, data submitted through DB17
- Section 3 discusses required data for the Sources module of the DB17 application

The following sections are not final and all information in these sections is subject to change as the new DB17 application is developed. Each of these sections will be updated as the new application is developed and the application modules corresponding to these sections are released.

- Section 4 outlines required data for the Water User Group (WUG) module of DB17
- Section 5 discusses required data for the Wholesale Water Provider (WWP) module of DB17
- Section 6 outlines required data for the Water Management Strategy (WMS) module of DB17

Please be aware that database and application development of DB17 will take a couple of years to complete and along the way there will be significant changes. One of the most significant changes is that WUG and WWP data will no longer be entered in separate modules in the application. All WUGs and WWPs will be grouped together in a master list of entities. Each entity will have WUG attributes, WWP attributes or both. Finally, there will be significant changes to the method which strategies, strategy sources and entities relate. For more information regarding these changes please refer to section 4.0. As a whole, these changes are intended to simplify the data entry process. This document provides an example of the extent of work that will be associated with entering data into DB17 but will change significantly as the new database and application is developed. These changes will be provided as a developing part of this contract document and released as new modules of DB17 are released for data entry.

Because of the changes to the database and application, it will be necessary for the RWPGs and their hired consultants to reestablish the relationships between entities (including WUGs and WWPs), existing sources of supply and water management strategies in DB17. This work will be similar to what was necessary in the 2007 Regional Water Planning Application (DB07).

1.0 General Data Requirements

Data should conform and comply with all 31 TAC Chapter 357 rules that require RWPGs to evaluate the adequacy of water supplies in each region during drought of record conditions. The data should also be developed based on the guidance in subsequent sections of this document and the *"Guidelines for Regional Water Plan Development (2011-2016)."* Evaluations should consider surface water, groundwater and reuse data from the state water plan, existing water rights, contracts and option agreements, and any other relevant planning and water supply studies available. In addition:

- submitted information must be accurate and based on the best data and science available
- potential interregional conflicts should be identified and resolved prior to final data entry into DB17
- RWPGs must enter all fields in DB17 unless otherwise stated
- spelling, word order, and proper names must be used consistently and correctly when entering data into DB17
- RWPGs must use the same reporting conventions for data shared by more than one region
- RWPGs must agree on underlying data (e.g. availability numbers) early on
- only whole numbers should be entered into DB17

2.0 Formats for Electronic Data

2.1 Files and Software

Electronic files may be shipped using CD, DVD or external hard drive. RWPGs should deliver one copy of electronic files (on CD, DVD or external hard drive), a copy of electronic file lists for each

CD, DVD or external hard drive, and file description print outs, including metadata file printouts. Files and data transferred to the TWDB should be in a ready-to-use format. Formats of all computer files provided to the TWDB should be compatible with widely distributed versions of the following software:

- word processor files - Microsoft Word (MS Office 2007 or newer versions)
- GIS coverages – Arc/Info (7.21 or newer)
- GIS shape files – ArcView (9.0 or newer)
- database files – Microsoft Access (MS Office 2007 or newer); each region will have access to DB17 via the internet and will be able to manage all of their data through DB17 without the need for additional database files
- internet browsers – Internet Explorer (8.0 or newer)
- spreadsheet files – Microsoft Excel (Office 2007 or newer)
- graphs, bar-charts, pie-charts – Microsoft Excel (Office 2007 or newer)

RWPGs should receive approval from the TWDB's executive administrator as to the compatibility of any alternative software.

Metadata and a printed file/disc description should accompany all electronic files. File description documentation must explain file naming conventions and contents of each disc and file. File naming conventions should follow a recognizable pattern. Files submitted must be 100 percent compatible with Microsoft Excel 2007. If using software other than Microsoft Excel 2007, RWPGs should receive prior approval from the TWDB as to its compatibility. All drawings and graphs included in reports should be provided to the TWDB in Encapsulated PostScript (EPS) formats with a TIFF preview using Pantone Process Colors (Pantone Matching System Colors – PMS colors) capable of being separated into four colors – cyan, yellow, magenta, and black.

Any other deliver methods will only be allowed with pre-approval from the TWDB if these requirements present a significant burden on the RWPG or as technology changes.

2.2 Data Units

The following units of measurement apply to all submitted data presentations:

- land area – square miles (mi^2)
- water area – acres (ac)
- water volume – acre-feet (ac-ft)
- water supply and demand – acre-feet per year (ac-ft/yr)
- treatment plant capacities – million gallons per day (mgd)
- water use per capita – gallons per capita per day (gpcd)
- stream flows and reservoir releases – cubic feet per second (cfs)
- pumping rates – gallons per minute (gpm) or million gallons per day (mgd)
- costs – constant September 2013 U.S. dollars (per Engineering News Record Construction Cost Index)

2.3 Data Requirements for Geographic Information

This section is intended to provide specific requirements and file delivery formats for all GIS materials developed in support of the regional water plan (RWP) process. These work products include GIS and imagery files that are created for the RWPGs and TWDB.

2.3.1 Required Maps and Data

While there is no list of required static maps for each RWP, RWPGs shall provide geographic information illustrating important features of each regional water planning area (RWPA) including regional boundaries, political subdivisions, major water demand centers such as cities, major providers of municipal and manufacturing water, major water supplies, mapped aquifers, and any other important and relevant features of a RWPA.

Each RWPG is responsible for submitting a digital data file containing geographic data for each recommended and alternative water management strategy (WMS) identified in the RWP.

2.3.2 Base Data

The Texas Natural Resources Information System (TNRIS) is part of the TWDB and provides GIS data state-wide. When available, RWPGs shall use TNRIS StratMap data products available online at: http://www.tnris.org/StratMap

If StratMap data products are not available, and the TWDB has other acceptable data, the TWDB shall make these base maps available. If the TWDB does not have StratMap or other products available, RWPGs may use other types of data, but shall coordinate with TWDB project managers to ensure compatibility.

2.3.3 GIS Data Files

All final versions of spatially-enabled files acquired or developed to support mapping and/or spatial analysis through TWDB-funded projects are considered property of the TWDB and are required to be submitted to TWDB. This includes but is not limited to all GIS, CAD, and image-formatted data. Only final versions of each layer are required for delivery to TWDB, and shall be in an approved format as specified in this document. In addition, all electronic geospatial data, whether vector or raster, shall have spatial reference information and be projection defined (have its coordinate system identified and embedded in or associated with the data file), and in the case of CAD data shall NOT be in page space or a custom site-specific projection. All CAD data shall be in known real world coordinate space, ideally in geographic/decimal degrees/NAD83. Should tabular data be appropriate to connect location information with attribute information, then documentation specifying the primary and foreign keys is required. Should coordinate information be provided in tabular format it should contain at minimum the following fields:

- ID – a unique identifier given to each feature
- Latitude – the Y coordinate in decimal degrees
- Longitude – the X coordinate in decimal degrees
- Horizontal Datum – the datum of the coordinates.

All static maps shown in RWPs shall be provided in an electronic Adobe PDF format with fonts embedded and at a resolution of 300 dots per inch (dpi) or greater. All ArcMap documents (.mxd) or equivalent map document formats used in final map production are also required for delivery to TWDB with accompanying data in a stand-alone directory structure. Map document formats also need to be configured to use relative paths and not be set to use a printer-specific paper setting.

2.3.4 Metadata and Projection Requirements

All GIS files developed for TWDB are required to have associated metadata. Deliverables are not considered complete without metadata. Metadata, including information about the data's projection, can be developed using one of several built-in or add on tools within ArcGIS, and typically is associated with the geometry file as an XML file.

All GIS files submitted to TWDB must have spatial reference information that describes the projection, datum, and where applicable the collection methods. The TWDB prefers to have vector data be submitted in geographic coordinate system, decimal degree units, and NAD83. Raster data, such as aerial photographs may be submitted in their native projection, and maps shall be in the appropriate projection/coordinate system for the area depicted.

2.3.5 Delivery Requirements and Standard Organizational Structures

As stated in Section 2.1, RWPGs shall deliver one copy of electronic files and a copy each of electronic file lists and file description print outs including metadata file printouts. TWDB will accept data delivered on CD, DVD, or external hard drive. Other delivery methods may be allowed with pre-approval from the TWDB if those requirements present a significant burden or as technology changes.

If the project is complex, a directory structure and readme text file in the upper level directory that describes the structure is required. File description documentation must explain file naming conventions and contents of each disc and file. File naming conventions shall follow a recognizable pattern and shall include information about the Region and figure title when relevant.

A recommended directory structure is as follows:

<ProjectName>

- ***Docs*** (reports, SOPs, correspondence, and other such documents)
- ***Images*** (aerial photos, satellite imagery, logos, DEMs, and other raster type data)
- ***Maps*** (MPK, MXD and PDF. Map names shall reference the Region and figure title as a prefix when possible)
- ***Shapes*** (geodatabases, shape files, and other approved vector data formats)
- ***Source*** (original unmodified data that may have been acquired from external/internal sources)
- ***Tables*** (databases, spreadsheets, delimited text files, or other such tabular data not stored in a geodatabase)

File naming conventions shall be logical, consistent, and contain no spaces or special characters, including the underscore. It is preferred that “camel case” be used in the formatting of file

names. “Camel case” is a formatting style that capitalizes the first letter of each word in the file name and does not include spaces. An example of “camel case” can be seen in the previous paragraph (ProjectName). File naming shall include Region and figure title when relevant.

2.3.6 TWDB Acceptable Data Formats

The following file formats are considered acceptable and all maps and data shall include an associated metadata document:

- Vector - projected to geographic, decimal degrees, NAD83 - other defined projections allowed on an individual basis:
  - Shape File (.shp, .shx, .dbf, .prj, .sbx, .sbn)
  - File Geodatabase (.gdb)
  - Personal Geodatabase (.mdb)
  - Map package (.mpk)
  - Oracle Dump (.dmp)
  - XML Workspace Document with dependencies clearly documented (.xml)
- Raster - native projection acceptable
  - TIFF image with world reference file or as a GeoTIFF (.tif, .tfw)
  - JPEG image with world reference file (.jpg, .jpw)
  - ERDAS Imagine image with pyramid file (.img, .rrd)
  - MrSid image (.sid)
  - ESRI Grid
  - DEM
- TINs - appropriate projection/coordinate system for the area depicted
  - ESRI TIN
- CAD - projected to geographic, decimal degrees, NAD83 or appropriate, specified projection
  - DXF layer separates (.dxf)
- Tabular - primary keys shall be clearly identified/documented
  - Microsoft Access 2007 database (.accdb)
  - Microsoft Excel 2007 spreadsheet (.xlsx)
  - Delimited text file (.txt, .csv)
- Static Maps
  - Adobe PDF at 300 dpi or better with embedded fonts (.PDF)
- Dynamic Maps
  - ArcMap document with associated data files in a stand-alone directory structure using relative paths (.mxd)

2.3.7 Checklists

Appendix B provides a one page checklist that can be used to verify that all geographic information meets the data requirements outlined in this section.

2.4 Graphs

Presentations of data using bar graphs, pie charts, line graphs etc. may be used where appropriate.

2.5 Data Time Frame and Time Steps

Data regarding population, water demands, water supplies, etc. are reported in decadal increments starting with the year 2020 and extending through the year 2070. Each decadal increment is a one-year representative of all years in that decade. For example, the year 2020 is a one-year snapshot of the entire decade and represents the years 2020 through 2029. Data must be developed and all requirements listed in this document and the *"Guidelines for Regional Water Plan Development (2011-2016)"* must be met for all decades even if the RWP cycle moves past the initial year.

3.0 Data for Existing Water Sources

This section describes the information in the Sources Module of DB17. It includes data fields that the RWPGs are required to populate, along with possible entry codes and methods to develop the required information. For additional guidance on the methods for regional water plan development, see the "*General Guidelines for Regional Water Plan Development (2011-2016).*"

The Sources Module in DB17 includes projected volumes of water from sources located in or available to each region under drought-of-record and existing development conditions, regardless of whether the supply is physically or legally available to use. The data within the Sources Module contains fields to describe all sources of water in the state along with their availability volumes.

The availability volumes will be entered as annual values for decades 2020 through 2070. Water sources will be described as groundwater, surface water or reuse. Sources that have the potential for desalination will also be identified in the Sources Module during the fourth cycle of regional and state water planning.

3.1 Types of Sources

Sources may be categorized under the following grouping levels in the Sources Module – surface water, groundwater, or reuse.

- Surface water: Lakes and reservoirs may be listed as individual reservoirs, as a system's surface water component (where reservoirs are operated in combination), or as the non-system portion of a reservoir. List all lakes and reservoirs as reservoirs or systems, but do not list any as run-of-river diversions. Report reservoirs and any lake/reservoir surface water components of a system at the basin level. All other surface water sources (run-of-river permits and local supplies) will be reported at the county-basin level. Surface water volumes will be reported as annual values under drought-of-record conditions.
- Groundwater: For groundwater sources, Modeled Available Groundwater estimates (MAGs) for approved desired future conditions in Groundwater Management Areas

(GMAs) will be populated in the database application by the TWDB and the values will not be editable by the RWPGs. For select aquifers in areas where MAGs do not exist, RWPGs may use other methods to determine groundwater availability, but the methods must be justified and documented. Groundwater sources may be listed as a component of a system if surface water, groundwater and/or reuse are combined together to supply end users. Groundwater volumes will be reported as annual values under drought-of-record conditions for each aquifer at the appropriate county-basin level.

- Reuse: Reuse sources should be listed as direct or indirect. Reuse sources may be listed as a component of a system if surface water, groundwater and/or reuse are combined together to supply end users. Reuse volumes will be reported as annual values under drought-of-record conditions for each reuse source at the appropriate county-basin level.

3.2 Systems

Surface water, groundwater and/or reuse sources may be aggregated and listed as systems, if applicable. It may be appropriate to list some sources as systems when 1) multiple reservoirs operate together to achieve a system gain, 2) multiple reservoirs operate together and the specific source of supply to each end user cannot be determined or 3) surface water, groundwater and/or reuse sources are combined together to supply end users.

Regardless of the justification for reporting multiple sources as a system, the firm yield of each reservoir that makes up the surface water component of the system should be listed in DB17. The only exception is when the firm yield of each reservoir that makes up the surface water component of the system has not been modeled individually. If the reservoirs that make up the surface water component of a system can be tracked to an end user, RWPGs should report these surface water sources as separate records and report any system gain as an additional source. For systems composed of surface water, groundwater and/or reuse, list both components separately. If a reservoir that is part of a system has a non-system portion, report the non-system portion as a separate record and report the system portion as part of the combined system yield (when the supply to each end user cannot be determined) or as a separate record (when the supply to each end user can be determined).

Availability volumes for systems and system components will be reported as annual values under drought-of-record conditions. The lake/reservoir surface water components of systems will be reported at the basin level, while all other surface water, groundwater and reuse components of systems will be reported at the county-basin level. The availability volume for a system may include a gain achieved via system operation.

3.3 Interregional Sources

If more than one RWPG uses an individual surface water, groundwater or reuse source, or system or any component of a system, the availability volumes must be consistent among the regions sharing the source. For example, if Region X and Region Y both use an individual source, system or system component, Region X and Region Y should agree on the amount of water

available prior to data entry. The naming conventions for shared sources, systems and system components must also be listed consistently in the database application.

3.4 Overallocating Sources

RWPGs should not overallocate water sources on a temporary or permanent basis. This means that the sum of existing water supplies plus any future WMS supplies assigned to entities (WUGs and WWPs), cannot exceed the Total Availability volume from a particular source in a county or river basin. For example, if an existing water source in a particular county or basin has an availability volume of 1,000 acre-feet per year, and 500 acre-feet per year has been apportioned to entities as their existing supply, no more than the remaining 500 acre-feet per year can be used as a source of supply for recommended WMSs.

3. 5 Data Fields for Existing Water Sources

The following is a listing of all data fields for existing water sources. All fields are editable through the application and are required unless otherwise stated below. Please refer to the matrix in Appendix C for a detailed description of field visibility and requirements.

- **SourceId** – Unique, numeric identifier for each source in the database application for the fourth round of regional water planning. This field is auto generated by the database and is not editable by the RWPGs.
- **DBSOID** – Unique, numeric identifier that was assigned to each source in the database applications for the second and third round of regional water planning. This field is assigned by TWDB staff and is not editable by the RWPGs.
- **Source Name** – Name of the water source. RWPGs and the TWDB must identify any sources not already included in the database application. The RWPGs will request to add sources to the Sources Module through the application, as necessary. The TWDB will evaluate all source requests to ensure that duplicate source records are not created within a region or between regions and that the new source record meets all database requirements. Source names will be listed consistently throughout the database application and approved by the TWDB. The source name will comply with standard database naming conventions developed by the TWDB. The source name will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source name will not be editable through the application.
- **Source Details** – Lists additional descriptive information about the water source. The RWPG may list additional information in this field to help uniquely identify a water source. This field will be displayed in the application to uniquely list all water sources in a region. The source details field will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source details field will not be editable through the application.
- **Source Region** – Identifying letter of the region (A through P) where the source is located. The source region will be editable by the RWPG when requesting a new source.

Once the TWDB has finalized the RWPG's request, the source region will not be editable through the application.

- A = Panhandle Region
- B = Region B
- C = Region C
- D = North East Texas Region
- E = Far West Texas Region
- F = Region F
- G = Brazos Region
- H = Region H
- I = East Texas Region
- J = Plateau Region
- K = Lower Colorado Region
- L = South Central Texas Region
- M = Rio Grande Region
- N = Coastal Bend Region
- O= Llano Estacado Region
- P = Lavaca Region

- **Source County** – County name where the source (or portion of the source) is located. This field is required for all sources except lakes/reservoirs, the Gulf of Mexico, the lake/reservoir surface water components of systems and sources located outside the state. For Gulf of Mexico sources, the source county will be Gulf of Mexico. For sources located outside the state, the county will be the state in which the source is located. The TWDB will provide a list of all county names. The source county will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source county will not be editable through the application.
- **Source Basin** – Name of the river basin where the source (or portion of the source) is located. This field is required for all sources except the Gulf of Mexico and sources located outside the state. For Gulf of Mexico sources, the source basin will be Gulf of Mexico. For sources located outside the state, the basin will be the state in which the source is located. The TWDB will provide a list of all river basin names. The source basin will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source basin will not be editable through the application.
- **Source Type** – Type of source. The source type will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source type will not be editable through the application. Please refer to the matrix in Appendix D that displays the relationships between source type and source sub type.
  - Groundwater
  - Surface water
  - Reuse
- **Source Sub Type** – Additional qualifier that describes the type of source. The source sub type will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, the source sub type will not be editable through the

application. Please refer to the matrix in Appendix D that displays the relationship between source sub type and source type.

- Groundwater
- System
- Reservoir
- Run-of-river
- Gulf of Mexico
- Livestock Local Supply
- Other Local Supply
- Direct Reuse
- Indirect Reuse

- **Is this an existing or future source? —** Indicates whether the source is an 'existing source only,' a 'future source only,' or 'both an existing and future source.' A source is an 'existing source only' if it 1) exists currently, regardless of whether the supply is physically or legally available for use and 2) will not be used for WMSs. A source is a 'future source only' if it 1) does not exist currently and 2) will only be used for WMSs. A source is 'both an existing and future source' if it 1) exists currently and 2) will also be used for WMSs. The RWPG will be able to indicate if the source is an existing or future source, or both, when requesting a new source. Once the TWDB has finalized the RWPG's request, this field will not be editable by the RWPG through the application.
  - Existing
  - Future
  - Both
- **Is this source generally considered brackish or saline?** – Indicates whether the source is considered fresh, brackish or saline water. The default value will be 'fresh.' This field will be editable by the RWPG when requesting a new source. Once the TWDB has finalized the RWPG's request, this field will not be editable through the application.
  - Fresh (<0.5 dissolved salts in parts per thousand)
  - Brackish (0.5–30 dissolved salts in parts per thousand)
  - Saline (30–50 dissolved salts in parts per thousand)
- **Was Total Availability reduced due to water quality considerations?** – Indicates whether water quality constraints were considered when developing total water availability estimates and Total Availability was reduced accordingly. The default value will be 'N.'
  - Y = Total Availability was reduced due to water quality considerations
  - N = Total Availability was not reduced due to water quality considerations
- **Methodology used to determine Total Availability volumes** – This field identifies the methodology used to determine the Total Availability volumes. Values from the following list are only valid for certain **Source Type** and **Source Sub Type** combinations. If certain values are selected from the following list, additional information must be provided in the **Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below** field. Please refer to the matrix in Appendix E for details. For sources with a **Source Type** and **Source Sub Type** of 'Groundwater' and where Total Availability

volumes are determined by Modeled Available Groundwater (MAG) numbers, the default value will be 'Modeled Available Groundwater (MAG).' For all other sources, the default value will be 'No methodology selected.' If more than one methodology can be selected from the list, please select 'Other' and enter all the methodologies and any supporting information in the **Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below** field.

  - Modeled Available Groundwater (MAG)
  - Groundwater Availability Model (GAM)
  - Groundwater Availability Model (GAM) Modified
  - Effective aquifer recharge
  - Availability set to demand
  - Published reports/data
  - Livestock/holding tank volume
  - Permitted amount
  - Diversion infrastructure capacity
  - Wastewater treatment plant discharge
  - Water Availability Model (WAM) Run 3
  - Water Availability Model (WAM) Run 3 Modified
  - Source is not in use
  - Other

- **Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below** – When certain values are selected in the **Methodology used to determine Total Availability volumes** field, additional information is required to be provided in this field. Please refer to the matrix in Appendix E for details.
- **If the source name is 'Other Aquifer' please list the aquifer name. If the aquifer name is unknown, please list 'Unknown'** – If the **Source Name** is 'Other Aquifer,' please specify the name of the aquifer in this field. If the name of the aquifer is unknown, please state that the aquifer name is unknown. This field is only visible and required in the application if the **Source Name** is 'Other Aquifer.'
- **Is Total Availability based on firm yield?** – Indicates whether the **Total Availability (2020-2070**) fields are based on firm yield. If the values entered into the **Total Availability (2020-2070)** fields are not based on firm yield, then the firm yield of the source must be entered into the **Firm Yield (2020-2070)** fields. This field will only be visible and required in the application if the **Source Type** is 'Surface Water' and the **Source Sub Type** is 'Reservoir' or 'System.' The default value will be 'Y.'
  - Y = Total Availability is based on firm yield
  - N = Total Availability is not based on firm yield
- **Additional comments about this source** – List any additional comments that may be pertinent to this source. This is an optional field.
- **Total Availability (2020-2070)** – Values for the total, annual, amount of water available from each source for years 2020, 2030, 2040, 2050, 2060 and 2070. The Total Availability volume for each source will be reported 1) under drought-of-record and 2)

existing development conditions, even if the source is not connected and available for use.

MAG estimates for approved desired future conditions in GMAs will be populated in the database application by the TWDB and will not be editable by the RWPGs. If the MAG estimate covers the entire geographic split of the aquifer, region, county and basin (in other words, the whole source) the **Total Availability (2020-2070)** numbers will equal the **MAG Availability (2020-2070)** numbers. These fields will be populated by the TWDB and neither will be editable by the RWPG. If the MAG estimate does not cover the entire geographic split of the whole source, then the **Total Availability (2020-2070)** numbers will equal the **MAG Availability (2020-2070)** plus the **Non-MAG Availability (2020-2070)** numbers. In this case the **Total Availability (2020-2070)** and **MAG Availability (2020-2070)** numbers will not be editable by the RWPG; however, the **Non-MAG Availability (2020-2070)** will.

If a source is a lake/reservoir or the lake/reservoir surface water component of a system, the Total Availability volume will be the total firm yield or total operational supply. If the value entered is based on an operational procedure, it should not exceed the firm yield of the lake or reservoir under drought-of-record conditions, except when documented system operations yield system gains.

When a source is shared among regions, list the mutually agreed-upon Total Availability for the source. The basis for the Total Availability volume entered must be noted in the **Methodology used to determine Total Availability volumes** field. The RWPGs must have prior approval from the TWDB to list Total Availability volumes for 1) surface water sources that are not based on firm yield and 2) modified MAG estimates. In addition, if the Total Availability for a reservoir or the lake/reservoir surface water component of a system is not based on firm yield, the **Firm Yield (2020-2070)** fields must be completed.

- **Firm Yield (2020-2070)** – If **Total Availability (2020-2070)** is not based on firm yield for reservoirs and the lake/reservoir surface water components of systems; list the value for the total firm annual amounts of water available from sources for years 2020, 2030, 2040, 2050, 2060 and 2070. If a source is a lake or reservoir, the value will be the total firm yield or total operational supply. If the value entered is based on an operational procedure, it should not exceed the firm yield of the lake or reservoir under drought-of-record conditions, except when documented system operations yield system gains. This field will only be visible and editable in the application if 'N' is selected from the '**Is Total Availability based on firm yield?**' field.
- **MAG Availability (2020-2070)** – The MAG estimates for approved desired future conditions in GMAs. This value will be populated for the years 2020, 2020, 2030, 2040, 2050, 2060 and 2070 by the TWDB and will not be editable by the region. If the MAG estimate covers the entire geographic split of the aquifer, region, county and basin (in other words, the whole source) these numbers will equal the **Total Availability (2020-2070)** numbers. If the MAG estimate does not cover the entire whole source, then the

Total Availability (2020-2070) numbers will equal the **MAG Availability (2020-2070)** plus the **Non-MAG Availability (2020-2070)** numbers. This field will only be visible in the application if any part of the **Total Availability (2020-2070)** field is calculated based on MAG estimates. It will never be editable in the application by the RWPG.

- **Non-MAG Availability (2020-2070)** – If the MAG estimate does not cover the entire geographic split of the aquifer, region, county and basin, then the RWPG can enter additional available supply for the geographic area not covered by the MAG. This field will only be visible and editable in the application by the RWPG under these conditions.
- **Additional comments about availability, including, if applicable, any comments about firm yield or MAG volumes** – List any additional comments specific to the availability, firm yield or MAG volumes.
- **Source Conservation Pool Details** – The following fields are listed in the **Source Conservation Pool Details** section. This section is only visible when the **Source Type** is 'Surface Water' and the **Source Sub Type** is 'Reservoir' or 'System.'
    - **System Name** – If the source is a reservoir system, then this will be the name of the source. If the source is not a reservoir system this will be 'Not a Reservoir System.' This field is not editable in the application.
    - **Reservoir Name** – If the source is a reservoir system, then this field will list the name of each reservoir that makes up the lake/reservoir surface water component of the system. If the source is not a reservoir system this will be the source name. This field is not editable in the application.
    - **Is this reservoir or reservoir component of this system associated with a federal facility, or water right owned or controlled by a federal agency (e.g. dam owned or reservoir operated by a federal agency)?** – If the reservoir's water right is owned or controlled by a federal agency, this field should be set to 'Y.' If not, then the field should be set to 'N.' This field will be pre-populated by the TWDB.
    - **What is the original conservation pool of this reservoir or reservoir component of this system?** – Enter the reservoir's initially determined conservation pool capacity, in acre-feet, as stated in best available data in this field. This may include the reservoir's water right, hydrosurvey reports, USACE revisions, owner information, or other appropriate sources. Cite the source of the information in the **Additional comments about this reservoir or reservoir component of this system** field. This field will be pre-populated by the TWDB.
    - **Additional comments about this reservoir or reservoir component of this system** – List any additional comments related to the Source Conservation Pool Details section in this field. This includes the source of the original conservation pool information.
    - **Source System Availability: Firm Yield (2020-2070)** – Values for the total, annual, amount of water available from each reservoir component of the system for years 2020, 2030, 2040, 2050, 2060 and 2070. The availability volume for each reservoir will be reported under drought-of-record and existing development conditions, even if the reservoir is not connected and available for use. This should be the firm yield of the reservoir component of the system.

4.0 Data for Entities

The database and application development for the current round of planning is ongoing and will involve changes to the data entry system. One of the most significant changes is that WUG and WWP data will no longer be entered in separate modules in the application. All WUGs and WWPs will be grouped together in a master list of "entities" in the "entity module" of the application. The entity module focuses data entry efforts on the whole entity, unsplit by the geographic boundaries of region, county, and basin. It unites the WUG and WWP data entry sections so that information entered as purchased supply from a seller will automatically appear in that entity's purchased WUG supply section. This new structure will increase data efficiency by eliminating duplicate data entry and it will improve the quality of data by assisting the data entry user with balancing water transactions.

The entity module includes descriptive data for WUGs, WWPs and (non-WWP) Sellers during the 50-year planning horizon from 2020 to 2070. The types of data that will be reported in the entity module include population and water demand projections, existing water supply sources and their volumes, WUG supplies, water sales, entity needs and surpluses. At this time, the water management strategy module is under development; therefore entity water management strategy information for DB17 will not be included or discussed in the Guidelines for Data Deliverables version 1.1.

Moving to the entity module structure required changes to the database and application. Because of these changes, the application will not be pre-populated with the information from previous planning cycles in the Entity and Water Management Strategy modules. The RWPGs will need to reestablish the relationships between entities (including WUGs, WWPs, and Sellers), existing sources of supply and water management strategies in DB17. For information regarding the functionality of the Entity module please read the "RWP Data Entry User Guide" listed on the Help tab of the RWP Data Entry application.

4.1 Entity Types

Entities will be categorized in the following manner in the Entity module (refer to Appendix F for a diagram of entity type assignments):

4.1.1 Water User Groups

WUGs include:

- cities with a 2010 population 500 or more;
- select Census Designated Places (CDPs), such as military bases;
- utilities located outside the boundaries of the cities and CDPs listed in the first two bullets of this section, that provide more than 280 acre-feet per year of water for municipal use;
- Collective Reporting Units consisting of grouped utilities having a common water supplier or water supplies;
- rural and unincorporated areas with municipal water use (referred to as "county-other" and aggregated on a county basis);
- manufacturing (aggregated on a county basis);
- steam electric power generation (aggregated on a county basis);
- mining (aggregated on a county basis);
- irrigation (aggregated on a county basis), and
- livestock (aggregated on a county basis).

WUGs are represented at region, county and basin unit levels, and if a WUG exists in one or more regions, counties, or basins, then each geographic portion of a WUG will be listed and data will need to be reported at that level in the WUG Supply section.

A WUG can be further divided into "Sub-WUGs" at the discretion of the RWPGs. A Sub-WUG is present when there is more than one WUG split for the same region, county, and basin. The name provided in the WUG detail field is what makes the additional WUG split unique. For example, a county-other WUG can be split into sub-WUGs to further define water users that would otherwise be aggregated at the county level. RWPGs will be responsible for maintaining all planning data at the sub-WUG level. To create a sub-WUG that doesn't already exist, please contact the TWDB.

4.1.2 Wholesale Water Providers

WWPs include:

- Any person or entity, including river authorities and irrigation districts, that has contracts to sell more than 1,000 acre-feet of water wholesale in any one year during the five years immediately preceding the adoption of the last regional water plan.
- Planning groups may include other persons and entities that are expected to meet the above definition during the period covered by the plan.

4.1.3 WUG/WWPs

WUG/WWPs include:

- An entity that meets both the WUG and the WWP definitions in the rules (see sections 4.1.1 and 4.1.2).

4.1.4 Sellers

Sellers include:

- Sellers are stand-alone entities that are not already labeled as WWP, WUG/WWP, WUG/Seller or a WUG. Sellers may have direct water sources, purchases, and sales. Sellers will function similarly to a WWP (no projection data or WUG supplies). If the Seller is technically part of a county-other WUG, the entire county-other WUG should have an entity type of "WUG/Seller". If the planning group decides to leave this type of entity aggregated in the county-other WUG and not separate it out as a stand-alone seller, then the planning group will need to list the name of the seller in the "Additional comments about this entity" field.

4.1.5 WUG/Sellers

WUG/Sellers include:

- Entities that meet the WUG definition in the rules (see section 4.1.1) and also sells less than 1000 acre-feet of water to other DB17 entities.

4.2 Entity Data Entry Requirements

Planning groups should report for each entity total water supply amounts from sources that currently exist and are connected and are accessible to entities under drought-of-record conditions, and limited to the most restrictive factor (see section 4.4.5 for a list of restrictive factors). These sources of supply may be accessed directly by an entity or purchased from another entity. Planning groups should also report WUG supply volumes and their water supply sales information. When reporting supply volumes for entities planning groups shall:

a) identify sources of existing water supply for entities;
b) enter source supply volumes (as divided by region-county-basin units) for all sources except lakes/reservoirs and surface water components of systems;
c) enter supply volumes at the basin level for reservoirs and surface water components of systems;
d) associate at least one source of supply with each entity. If the source is unreliable during drought of record conditions, show all decadal volumes as zero;
e) assign source WUG supply volumes to each WUG (or geographic portion of the WUG);
f) extend supplies into future decade based on contractual agreements if a contract is renewable or anticipated to be renewed;
g) list sales to other entities by the sources sold;

h) not exceed the total source availability volume by multiple users of a shared source;
i) ensure that an entity is not selling or using more water from a source than the amount that is actually available to them;
j) show entity surpluses in any decade when that entity plans to sell their surplus to another entity through a water management strategy.

4.3 Entity Data Entry Guidance

In order for the entity module to work as designed, entities must have correctly assigned attributes and users must follow a series of steps to enter their water supply and sales volume transactions.

4.3.1 Entity Attributes and Entity Module Display

The entity module displays data based on attributes associated with each entity. It is very important that the planning group review the entity list and confirm that the attributes have been appropriately assigned.

- Primary Region – Each entity is assigned a primary region. Data entry users with access to the entity's primary region will be responsible for all data entry associated with that entity. Data entry users with access to the entity's primary region will be able to add, edit, and delete data related to direct source water volume, WUG supply, and sales.
    - WWPs and Sellers were assigned a primary region based on input from RWPGs.
    - Municipal WUGs split by more than one region were assigned a primary region based on the region associated with the highest percentage of the WUG's population.
    - Non-Municipal WUGs split by more than one region were assigned a primary region based on the region associated with the highest percentage of the WUG's demand.
- Entity Type – Each entity is assigned an entity type attribute. For a list of entity types and their descriptions see section 4.1. The assigned entity type will affect entity module page visibility. Refer to Appendix G for a table displaying entity module "page visibility" by entity type. If an entity is incorrectly labeled, please contact the TWDB for assistance.

4.3.2 Entity Transaction Data Entry Order

The entity module is designed so that purchased/sold water volumes are entered as transactional data. An entity will be associated with a volume of water that they have available to use for both their WUG demands if they are an entity type of either "WUG", "WUG/WWP", or "WUG/Seller" and sales to other entities if they are an entity type of "WWP", "Seller", "WUG/WWP", or "WUG/Seller". This volume of water is referred to as "Volume-In". The sum of the entity's WUG supply and sales to other entities cannot exceed its total Volume-In, in order for the entity's water volumes to balance. All Volume-In transactions must be listed at the source level to ensure that a source's availability is not being over allocated. See Appendices I-K for diagrams containing water volume explanations by entity type.

Sources are associated with entities by "Tiers." A source's Tier 1 entities have direct access to the source's available volume of water, its Tier 2 entities purchase the source's water from a Tier 1 entity, its Tier 3 entities purchase the source's water from a Tier 2 entity and so on. **It is very important that a source's entity water volume data is entered first for Tier 1 entities, then by order of the remaining Tiers.** Tier 1 entities are the first to connect with the source through the entity module page labeled Direct Source Volume-In. Once the source is connected with the Tier 1 entity on the Direct Source Volume-In page, it automatically displays as a potential source for sale and/or use as WUG supply in the other entity module pages. Once the sale of the source is established with a Tier 2 entity, it will automatically display as a potential source for sale and/or use as WUG supply for that entity. Refer to Appendix L for a diagram of the entity transaction tier structure.

Sources will display for Sales, Purchased Volume-In, or WUG Supply when these steps are followed:

1) It is advised that data entry users first identify all entities that have direct access to sources. Entities may have direct access to more than one source. Direct access means that the entity does not buy the source's water volume from another entity; (e.g., it has a water right permit or ownership of the groundwater rights.) Once the Tier 1 entity list has been identified, users should enter the total volume of water by direct access source that each Tier 1 entity has available to use for both WUG supply and/or sales to other users in the entity module's Direct Source Volume-In page. These decadal Direct Source Volume-In values can also include surpluses that the entity has direct access to and plans to sell in the future through water management strategies. See Appendices I-K for diagrams containing water volume explanations by entity type.

2) If the Tier 1 entity has the attribute of WWP, Seller, WUG/WWP, or WUG/Seller, the user will next enter all sales data related to that entity. The selling entity will establish relationships with buyers through the entity module's Entity Sales page. Once the buyer/seller relationship has been established, all sources that the seller has associated with it will be displayed for each of the buyers. If a source is not being sold, the data entry user must uncheck the **Sold** box next to the source name. Water volumes sold to a buyer become their "Purchased Volume-In" and will automatically display as a potential source for sale and/or use as WUG supply in their entity module pages.
   Note: Transaction types must be tracked separately in order for the water volumes to balance. A transaction type can be "Direct Source" or "Purchased." For example, if an entity has both direct sources and purchased sources, they will need to account for both their Direct Source and Purchased data related to that source in the sales and WUG supply sections.

3) All subsequent entity tier purchase data should be entered in order of tier so that transaction types/sources will display for use by WUG supply or sales.

4) Once a) all the Direct Source Volume-In values have been entered for sources, b) the buyer/seller relationships have been established and c) water volumes are allocated to the sources sold; direct source and purchased Volume-In values will display for entities with a type of WUG, WUG/WWP, or WUG/Seller on their Entity WUG Supply pages. The data entry user will establish how much volume from each transaction type/source is being used as WUG supply for the entity as a whole (unsplit by geographic boundaries). Once the whole entity WUG supply volume has been entered, the data entry user can click the **Split Use** button and allocate the whole entity's WUG supply by transaction type/source to its WUG splits based on their percentage of the whole entity's WUG demand in each decade. If a source automatically displays in the WUG supply page for one of its geographic splits and it is not associated with its supply, uncheck the **WUG Uses** check box.

4.3.3 Wholesale and Retail Sales

There are two types of sale, "Wholesale" and "Retail". An entity sells water wholesale when they sell directly to another entity. A retail sale takes place when the water is sold not to the entity as a whole, but to individual customer connections that are counted as part of the entity's population. See Appendix H for a diagram displaying the difference between wholesale and retail sales. The data entry rules associated with the wholesale/retail sales are as follows:

- An entity cannot sell the same source volume wholesale to an entity that either directly sold the source volume to them or indirectly sold it to them. If an entity buys water from another entity either directly or indirectly and they plan to sell it back, the water volume should not be listed as a sale and should remain with the entity that will ultimately be using it to meet their internal demands or keeping the water as a surplus for future sales. This may require modifying volumes to avoid "feedback loops".
- An entity cannot sell retail to another entity that has a type of "WWP" or "Seller". Only entity types of "WUG/WWP", "WUG/Seller", and "WUG" can purchase retail.
- Retail water sold to an entity cannot be resold to another entity. Retail water goes directly to end user connections and therefore cannot be resold.

4.3.4 Adding or Removing Transaction Chain Data

When source water volumes are bought and sold through multiple sellers, this builds a "transaction chain". If a seller is associated with multiple sources through either direct access or through purchases, all of their sources are displayed for customers related with the seller. When a new source is added to the seller, it is also added to its direct and indirect customers as both a purchased volume and WUG supply records. **In order to remove a source from a seller, the records related to that seller/source combination must first be removed from all customers that have purchased from that seller or another seller that purchased water from the seller.** This functionality will assist users with keeping all sources and sales in balance.

4.3.5 Balancing Entity Water Volume Data

In order for the entity's water volume data to be correct, certain conditions must be true:

- For each transaction type / supply source combination, the sum of the split WUG supply volumes must equal the whole entity WUG supply volumes for each decade.
- For each transaction type / supply source combination, the sum of the whole entity WUG supply volumes plus the total sales to other customers must be equal to or less than the associated Volume-In for each decade.
- For each buyer/seller combination, the total amount sold to an entity must be equal to the sum of the sale allocated to the seller's sources for each decade.
- The sum of all Direct Source Volume-In water volumes associated with a source must be equal to or less than the source's total availability volume or else the source will be considered overallocated.

The application incorporates unintrusive calculated fields that assist the user with balancing underlying water volumes. When an update to the entity module pages creates an issue with a decade, all data entry boxes related to the decade's water volume will be highlighted in red, yet allow the user to save data. See section 4.4 Entity Data Fields for a detailed description of how the calculated fields work. There will also be an Entity Data Checks module that will provide the user with a master list of all potential errors.

4.4 Data Fields for Entities Existing Water Supply

Please read the "RWP Data Entry User Guide" listed on the **Help** tab of the RWP Data Entry application for more information on each Entity Module page's functionality.

4.4.1 Entity Description

- "EntityRWPId"- Unique, numeric identifier that is assigned to each whole entity and their associated splits in the database applications for the fourth round of regional water planning. This field is assigned by TWDB staff. Not editable.
- "Entity Name"- Name of entity. Entities should only be listed only once in this module. Not editable.
- "Entity Region"- Identifying letter for region (A through P) for the entity. This is the "primary region" for the entity and the planning group listed will be the planning group responsible for all of the data entry for that entity. Refer to section 4.3.1 for a description of the entity primary region. Not editable.
- "Entity Type"- Type of Entity: WUG, WWP, WUG/WWP, WUG/Seller, Seller. Not editable.

- "Entity WUG Type" – Category of water use: Municipal, Manufacturing, Steam Electric Power, Irrigation or Livestock concatenated with the WUG sub category: City, County-Other, Utility, Collective Reporting Unit, Manufacturing, Mining, Irrigation, Livestock, or Steam Electric Power. Not editable.

- "Additional comments about this entity"- Lists additional descriptive information about the entity. Editable.

4.4.2 WUG Projections

The TWDB will upload all population data after the regional review process for population and water demands is complete and Board has approved population estimates.

Whole Entity WUG Projections Totals

- "Population"- Sum of the annual WUG population values for 2020 through 2070 for the entity as a whole. Population data is associated with municipal WUGs only. Not editable.
- "Water Efficiency Savings"- Estimated water use reduction in GPCD for each municipal WUG as a whole due to replacement rates for adoption of water-efficient fixtures and appliances required by law for decades 2020 through 2070. Not editable.
- "GPCD"- WUG gallons per capita daily volumes for decades 2020 through 2070, for each municipal WUG as a whole. Not editable.
- "Demand"- Sum of the annual WUG demand values in acre-feet for each WUG as a whole for decades 2020 through 2070. Not editable.

Split Entity WUG Projections

- "Population"- WUG population values for decades 2020 through 2070 for each geographical portion of a municipal WUG. Population data is only entered for municipal WUGs. Not editable.
- "Water Efficiency Savings"- Estimated water use reduction in GPCD for each geographical portion of municipal WUG due to replacement rates for adoption of water-efficient fixtures and appliances required by law for decades 2020 through 2070. Not editable.
- "GPCD"- WUG gallons per capita daily values for decades 2020 through 2070 for each geographical portion of a municipal WUG. Not editable.
- "Demand"- Annual WUG water demand values in acre-feet for each geographical portion of a WUG for decades 2020 through 2070. Not editable.

4.4.3 Direct Source Volume-In

- "Summary Report" – By clicking on the "View Report" hyperlink, the user will load a PDF containing a summary of all data related to the entity name listed in the grey title bar.
- "Entity Name | Primary Region" - Name of entity and the entity's primary region. Not editable.
- "Source Name | Detail" – To add a source, click the **Add Source** button listed to the left of the Entity Name. For more information on how to add a source, refer to the document titled "RWP Data Entry User Guide."Name of the water source concatenated with the value listed in the Source Detail field. Not editable.
- "Region" - Identifying letter of the region (A through P) where the source is located. For more information regarding this field, refer to section 3.5. Not editable.
- "County" - County name where the source (or portion of the source) is located. For more information regarding this field, refer to section 3.5. Not editable.
- "Basin" - Basin name where the source (or portion of the source) is located. For more information regarding this field, refer to section 3.5. Not editable.
- "Salinity" - Indicates whether the source is considered fresh, brackish or saline water. For more information regarding this field, refer to section 3.5. Not editable.
- "Source Type | SubType" – The type of source concatenated with the Source Sub Type. For more information regarding this field, refer to section 3.5. Not editable.
- "Source Balance Report" - By clicking on the "View Report" hyperlink, the user will load a PDF containing a summary of all data related to the source.
- "Unused Source Availability 2020-2070" – The sum of all entities' Direct Source Volume-In related to each source subtracted from the source's Total Availability volumes. This calculation will display the amount remaining of the source's Total Availability that can be used as Direct Source Volume-In. Once an entity exceeds the source's Total Availability volume in any decade, the over allocated decade will highlight in red for all entities associated with the source as a Tier 1 entity. To refresh the calculation after changes have been made on the page, click the **Update** button. Calculated fields. Not editable.
- "Direct Source Volume-In 2020-2070" – Annual Direct Source Volume-In for entity as a whole by source for decades 2020 through 2070. Direct Source Volume-In total should include WUG supply to Entity's geographic splits, sales to other entities, and any surpluses held. In order for the supply volume to be considered "Direct Source Volume-In," the user must have direct access to the source's water volume. If entity purchases the water volume, it will be listed on the Entity Sales page and not the Entity Direct Source Volume-In page. Increases requiring new infrastructure should be attributed to recommended water management strategies. Editable.

- "External Comments" – Lists additional descriptive information about the entity's Direct Source Volume-In from a source. Editable.
- "TransactionId" – Unique, numeric identifier that is assigned to each direct source Volume-In record stored in the database. This field is assigned by TWDB staff. Not editable.

4.4.4 Entity Sales

- "Buyer Entity Name"- The name of the entity purchasing water from the seller. To add a buyer to a seller click either the **Wholesale** or **Retail** button listed to the left of the Entity Name. Refer to section 4.3.3 for a detailed description of Wholesale and Retail. For more information on how to add a buyer to a seller refer to the document titled "RWP Data Entry User Guide." Not editable.
- "Wholesale/Retail"- Data saved in this field is added when a seller chooses to either sale wholesale or retail when selecting a buyer. See section 4.3.3 which describes wholesale and retail sales. Editable.
- "Buyer Entity Summary Report"- By clicking on the "View Report" hyperlink, the user will load a PDF containing a summary of all data related to the buyer entity.
- "Buyer WUG Demand"- The whole WUG demand of each buyer entity for decades 2020 through 2070. This row will be null for buyer entities with a type of "WWP" or "Seller". Not editable.
- "Contract Demand"- Volume of water required by contract for each buyer entity for decades 2020 through 2070. Editable.
- "Contract Expiration Date"- Contract expiration date for each buyer's purchase. Planning groups should include this date even if a contract is assumed to be renewable. If the contract does not expire, enter the value 12/31/9999. Editable.
- "External Comments"- Lists additional descriptive information about the entity's sale to the purchaser. Editable.
- "TransactionId" – Unique, numeric identifier that is assigned to each contract demand record stored in the database. This field is assigned by TWDB staff. Not editable.
- "Total Sale Amount"- Total volume sold to each buyer entity for decades 2020 through 2070. Editable.
- "TransactionId" – Unique, numeric identifier that is assigned to each total sale record stored in the database. This field is assigned by TWDB staff. Not editable.

- "Allocated Total Sale Amount"- The sum of all volumes sold to a buyer entity that has been allocated to each source sold. The sum of the Allocated Total Sale Amount must equal the corresponding Total Sale Amount decade. If a Total Sale Amount decade does not equal the corresponding Allocated Total Sale amount decade, the Total Sale Amount decade and the decade of the all allocated sources will highlight in red. To refresh calculation after changes have been made on the page, click the **Update** button. Calculated fields. Not editable.
- "Sold"- All sources associated with a seller are automatically displayed for each buyer that is added. If a source is not being sold to a buyer, the data entry user must uncheck the **Sold** checkbox next to the source. Editable.
- "Transaction Type"- This field describes how the source is acquired by the seller. The transaction type can be "Direct Access" or "Purchased." Not editable.
- "Direct Source Entity Name"- If the transaction type is "Purchased," the transaction chain's direct access user will be listed. It is the name of the entity that added the source as direct source volume-in and set up the initial sale of the source to either the buyer entity displayed or another entity that either directly or indirectly sold to the buyer. If the transaction type is "Direct Access,'' the seller's entity name will be listed. Not editable.
- "Source Name | Detail"- Concatenated source name and source detail fields. For more information regarding this field, refer to section 3.5. Not editable.
- "Region" - Identifying letter of the region (A through P) where the source is located. For more information regarding this field, refer to section 3.5. Not editable.
- "County" - County name where the source (or portion of the source) is located. For more information regarding this field, refer to section 3.5. Not editable.
- "Basin" - Basin name where the source (or portion of the source) is located. For more information regarding this field, refer to section 3.5. Not editable.
- "Salinity" - Indicates whether the source is considered fresh, brackish or saline water. For more information regarding this field, refer to section 3.5. Not editable.
- "Source Type | Subtype" – The type of source concatenated with the Source Sub Type. For more information regarding this field, refer to section 3.5. Not editable.
- "Source Balance Report" - By clicking on the "View Report" hyperlink, the user will load a PDF containing a summary of all data related to the source.
- "Total Volume Available for Sale"- The sum of all sales associated with the source/ transaction and the seller entity's WUGs supplies, if any; subtracted from the source transaction's associated Volume-In values. This calculated row identifies how much water is left available for sale for the source/transaction combination. If the user attempts to sell more water than is available in any decade, that decade will highlight in red. To refresh the calculation after changes have been made on the page, click the **Update** button. Calculated fields. Not editable.

- "Sale Amount"- The volume of water for decades 2020-2070 that has been sold from the source/transaction listed. Editable.
- "External Comments"- Lists additional descriptive information about the entity's sales by source/transaction for the buyer entity. Editable.
- "TransactionId" – Unique, numeric identifier that is assigned to each sold source record stored in the database. This field is assigned by TWDB staff. Not editable.

4.4.5 WUG Supply

Direct Source Entity WUG Supply

- "Entity Name"- Name of entity and the entity's primary region. Not editable.
- "Entity Summary Report"- By clicking on the "View Report" hyperlink, the user will load a PDF containing a summary of all data related to the entity.
- "Transaction Type"- This field describes how the source was acquired by the seller. In this case the transaction type will be "Direct Access." Not editable.
- "Entity Name"- Name of entity and the entity's primary region. Not editable.
- "Source Name | Detail"- Concatenated source name and source detail fields. For more information regarding this field, refer to section 3.5. Not editable.
- "Region" - Identifying letter of the region (A through P) where the source is located. For more information regarding this field, refer to section 3.5. Not editable.
- "County" - County name where the source (or portion of the source) is located. For more information regarding this field, refer to section 3.5. Not editable.
- "Basin" - Basin name where the source (or portion of the source) is located. For more information regarding this field, refer to section 3.5. Not editable.
- "Salinity" - Indicates whether the source is considered fresh, brackish or saline water. For more information regarding this field, refer to section 3.5. Not editable.
- "Source Type | Subtype" – The type of source concatenated with the Source Sub Type. For more information regarding this field, refer to section 3.5. Not editable.
- "Source Balance Report" - By clicking on the "View Report" hyperlink, the user will load a PDF containing a summary of all data related to the source.
- "Remaining Direct Source Volume-In"- Sum or all WUG Supplies and sales, if any; subtracted from the entity's Direct Source Volume-In associated with the source for decades 2020-2070. This calculated row identifies how much water is left available for use as WUG Supplies. If the user enters a greater WUG supply volume than what is available in any decade, that decade will highlight in red. To refresh calculation after changes have been made on the page, click the **Update** button. Calculated fields. Not editable.

- "Direct Source Whole WUG Supply"- Annual supply volume from each direct source used to meet each whole entity's internal WUG demands for decades 2020-2070 where the volume is limited by the most restrictive factor. Editable.
- "Limiting Factor"- Listing of limiting factor letter found to be most restrictive for each direct source of supply for each WUG. Editable. Water supplies for WUGs should be limited to the most restrictive from the following criteria:

    - A) Supplies or fractions of supplies available from reservoirs or surface water components of systems.
    - B) Current well field capacities.
    - C) Hydrogeologic properties of aquifers.
    - D) Water quality.
    - E) Current water rights, permits or other applicable regulatory restrictions.
    - F) Current contracts and/or option agreements.
    - G) Existing conveyance infrastructure.
    - H) Water treatment plant capacity.
    - I) Obligations that water user groups may have in terms of contracts or direct and indirect water sales to other entities.
    - J) Other. If supply is limited by none of the above or a combination of the above, explicitly state the most restrictive limitation(s) in the "External Comments" field.

- "External Comments"- Lists additional descriptive information about whole WUG entity's direct access WUG supplies for each source listed. Editable.
- "TransactionId" – Unique, numeric identifier that is assigned to each direct source whole WUG supply record stored in the database. This field is assigned by TWDB staff. Not editable.

- "Split WUG Total"- The sum of the WUG's geographic split volumes by direct access source for decades 2020-2070. The Split WUG total for the whole entity's geographic splits must equal the whole entity's WUG supplies for each direct access source. To refresh calculation after changes have been made on the page, click the **Update** button. Calculated fields. Not editable.

- "Uses"- All direct access sources associated with an entity are automatically displayed in the entity's WUG supply section. If a source is not being used as WUG supplies, the data entry user must uncheck the Uses checkbox next to the source. Editable.
- "Split WUG Supply"- Annual direct source supply volume used to meet each WUG's geographic split(s) internal WUG demands for decades 2020-2070 where the volume is limited by the most restrictive factor. Editable.
- "External Comments"- Lists additional descriptive information about WUG geographic split's direct access WUG supplies for each source listed. Editable.

- "TransactionId" – Unique, numeric identifier that is assigned to each direct source split WUG supply record stored in the database. This field is assigned by TWDB staff. Not editable.

Purchased Entity WUG Supply

- "Seller – Entity Name | Detail"- Name of the seller entity and that entity's primary region associated with the Purchased Volume-In and WUG Supplies. Not editable.
- "Wholesale/Retail"- Data saved in this field is added when a seller chooses to either sale wholesale or retail when selecting a purchaser. See section 4.3.3 which describes wholesale and retail sales. Not editable for buyer entity. If buyer data needs to be updated, contact the data entry user responsible for entering the seller's data.
- "Seller Entity Summary Report"- By clicking on the "View Report" hyperlink, the user will load a PDF containing a summary of all data related to the seller entity.
- "Buyer Contract Demand"- Annual volume amounts required by contract for each supply purchased from another entity for decades 2020 through 2070. Supplies based on contractual agreements must extend past the existing term of a contract if contract holders expect renewals or extensions. Increases requiring new infrastructure should be attributed to recommended water management strategies. Not editable for buyer entity. If buyer data needs to be updated, contact the data entry user responsible for entering the seller's data.
- "Contract Expiration"- Contract expiration date for each buyer's purchase. Not editable for buyer entity.
- "TransactionId" – Unique, numeric identifier that is assigned to each entity contract demand record stored in the database. This field is assigned by TWDB staff. Not editable.
- "Total Remaining Purchased Volume-In by Seller"- Sum or all WUG Supplies and sales, if any; subtracted from the entity's Purchased Volume-In associated with the seller for decades 2020-2070. This calculated row identifies how much water is left available for use as WUG Supplies. If the user attempts to enter a greater WUG supply volume than what is available in any decade, that decade will be highlighted red. To refresh calculation after changes have been made on the page, click the **Update** button. Calculated fields. Not editable.
- "Total Purchased WUG Supply"- The sum of all WUG Supplies allocated to purchased sources used to meet whole entity's internal WUG demands for decades 2020-2070 where the volume is limited by the most restrictive factor. If the total purchased WUG supply does not equal the supply allocated to the purchased sources in any decade, that decade will be highlighted red. To refresh calculation after changes have been made on the page, click the **Update** button. Calculated fields. Not editable.
- "Transaction Type"- This field describes how the source was acquired by the seller. The transaction type can be "Direct Access" or "Purchased." Not editable.

- "Direct Source Entity Name"- Source's transaction chain's direct access user. It is the name of the entity that added the source as direct source volume-in and set up the initial sale of the source to either the buyer entity displayed or another entity that either directly or indirectly sold to the buyer. Not editable.
- "Source Name | Detail"- Concatenated source name and source detail fields. For more information regarding this field, refer to section 3.5. Not editable.
- "Source Name | Detail"- Concatenated source name and source detail fields. For more information regarding this field, refer to section 3.5. Not editable.
- "Region" - Identifying letter of the region (A through P) where the source is located. For more information regarding this field, refer to section 3.5. Not editable.
- "County" - County name where the source (or portion of the source) is located. For more information regarding this field, refer to section 3.5. Not editable.
- "Basin" - Basin name where the source (or portion of the source) is located. For more information regarding this field, refer to section 3.5. Not editable.
- "Salinity" - Indicates whether the source is considered fresh, brackish or saline water. For more information regarding this field, refer to section 3.5. Not editable.
- "Source Type | SubType" – The type of source concatenated with the Source Sub Type. For more information regarding this field, refer to section 3.5. Not editable.
- "Source Balance Report" - By clicking on the "View Report" hyperlink, the user will load a PDF containing a summary of all data related to the source.
- "Remaining Purchased Volume-In by Seller/Source"- Sum or all WUG Supplies and sales, if any; subtracted from the entity's Purchased Volume-In associated with the seller, source and transaction for decades 2020-2070. This calculated row identifies how much water is left available for use as WUG Supplies. If the user attempts to enter a greater WUG supply volume than what available in any decade, that decade will be highlighted red. To refresh calculation after changes have been made on the page, click the **Update** button. Calculated fields. Not editable.
- "Purchased Whole WUG Supply"- Annual supply volume from each purchase by seller, source, and transaction used to meet each whole entity's internal WUG demands for decades 2020-2070 where the volume is limited by the most restrictive factor. Editable.
- "Limiting Factor"- Listing of limiting factor letter found to be most restrictive for each purchased WUG supply for each WUG. Editable. Water supplies for WUGs should be limited to the most restrictive from the following criteria:
    - A) Supplies or fractions of supplies available from reservoirs or surface water components of systems.
    - B) Current well field capacities.
    - C) Hydrogeologic properties of aquifers.

  - D) Water quality.
  - E) Current water rights, permits or other applicable regulatory restrictions.
  - F) Current contracts and/or option agreements.
  - G) Existing conveyance infrastructure.
  - H) Water treatment plant capacity.
  - I) Obligations that water user groups may have in terms of contracts or direct and indirect water sales to other water user groups.
  - J) Other. If supply is limited by none of the above or a combination of the above, explicitly state the most restrictive limitation(s) in the "External Comments" field.

- "External Comments"- Lists additional descriptive information about the whole entity's purchased WUG supplies. Editable.
- "TransactionId"- Unique, numeric identifier that is assigned to each purchased whole WUG supply record stored in the database. This field is assigned by TWDB staff. Not editable.
- "Split WUG Total"- The sum of the WUG's geographic split volumes by seller, source, and transaction for decades 2020-2070. The Split WUG Total for the whole entity's geographic splits must equal the whole entity's WUG supplies for each purchased source. To refresh calculation after changes have been made on the page, click the **Update** button. Calculated fields. Not editable.
- "Uses"- All purchased sources from sellers associated with an entity are automatically displayed in the entity's WUG supply section. If a source is not being used as WUG supplies, the data entry user must uncheck the Uses checkbox next to the source. Editable.
- "Split WUG Supply"- Annual purchased supply volume used to meet each WUG's geographic split(s) internal WUG demands for decades 2020-2070 where the volume is limited by the most restrictive factor. Editable.
- "External Comments"- Lists additional descriptive information about WUG geographic split's purchased WUG supplies for each seller, transaction, source listed. Editable.
- "TransactionId"- Unique, numeric identifier that is assigned to each purchased split WUG supply record stored in the database. This field is assigned by TWDB staff. Not editable.

4.3 Water Management Strategy Guidance

The WMS module is currently under construction. This section will be updated prior to its release.

Appendix A: Acronym Definitions

The following is a list of definitions for common acronyms used throughout this document:

- TWDB – Texas Water Development Board
- DB17 – The 2017 Regional Water Planning Application
- RWPG – Regional Water Planning Group
- RWP – Regional Water Plan
- RWPA – Regional Water Planning Area
- WUG – Water User Group
- WWP – Wholesale Water Provider
- WMS – Water Management Strategy
- DB07 – The 2007 Regional Water Planning Application
- DB12 – The 2012 Regional Water Planning Application

Appendix B: Geographic Information Data Requirements Checklist

The following checklists may be used to assist in complying with data requirements for geographic information listed in Section 2.3:

- Data

  - ☐ Is each vector file, CAD included, in geographic, decimal degrees, NAD83 or appropriate, specified projection?
  - ☐ Is each raster file in its native projection?
  - ☐ Is each data file one of the TWDB acceptable formats?
  - ☐ Does each data file have metadata in an associated file?
  - ☐ Are the primary and foreign keys documented for tabular data?
  - ☐ Is a README text file included with a directory structure explaining how the structure is organized?

- Maps

  - ☐ Is each static map provided in an electronic format at a resolution of 300 dpi or higher?
  - ☐ Does each static map have fonts embedded?
  - ☐ Has the page and print setup for map documents been configured to NOT use printer-specific paper settings?
  - ☐ Are map documents set to use relative paths?
  - ☐ Are map names prefixed with the project name, including the appropriate region?
  - ☐ Are map documents accompanied with their relevant data in a stand-alone directory structure?
  - ☐ Does each map have metadata in an associated file?

Appendix C: DB17 Sources Module Data Field Matrix

The following matrix lists the data fields in the Source Module, the various source types and sub types and whether the field is visible, editable and required in the DB17 application. 'Y' equals 'Yes,' 'N' equals 'No' and 'C' equals 'Conditional.' If a row and column have a 'C' listed, please refer to the footnotes below the table.

	Label	Groundwater: MAG			Groundwater: Non-MAG (With MAG Availability)		
		Visible	Editable	Required	Visible	Editable	Required
1	SourceId:	Y	N	N	Y	N	N
2	DbSoId:	Y	N	N	Y	N	N
3	Source Name:	Y	N	N	Y	N	N
4	Source Details:	Y	N	N	Y	N	N
5	Source Region:	Y	N	N	Y	N	N
6	Source County:	Y	N	N	Y	N	N
7	Source Basin:	Y	N	N	Y	N	N
8	Source Type:	Y	N	N	Y	N	N
9	Source Sub Type:	Y	N	N	Y	N	N
10	Is this an existing or future source?:	Y	N	N	Y	N	N
11	Is this source generally considered brackish or saline?:	Y	Y	Y	Y	Y	Y
12	Was Total Availability of the source reduced due to water quality considerations?:	Y	Y	Y	Y	Y	Y
13	Methodology used to determine availability volumes:	Y	Y	Y	Y	Y	Y
14	Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below:	Y	Y	C[1]	Y	Y	C[1]
15	If the source name is 'Other Aquifer' please list the aquifer name. If the aquifer name is unknown, please list 'Unknown':	C[2]	C[2]	C[2]	C[2]	C[2]	C[2]
16	Is Total Availability based on firm yield?:	N	N	N	N	N	N
17	Additional comments about this source:	Y	Y	N	Y	Y	N
18	Decade	Y	N	N	Y	N	N
19	Total Availability	Y	N	N	Y	N	N
20	Firm Yield	N	N	N	N	N	N
21	MAG Availability	Y	N	N	Y	N	N
22	Non-MAG Availability	N	N	N	Y	Y	Y

23	Additional comments about availability, including, if applicable, any comments about firm yield or MAG volumes:	Y	Y	N	Y	Y	N
24	System Name:	N	N	N	N	N	N
25	Reservoir Name:	N	N	N	N	N	N
26	Is this reservoir or reservoir component of this system associated with a federal facility, or water right owned or controlled by a federal agency (e.g. dam owned or reservoir operated by a federal agency)?:	N	N	N	N	N	N
27	What is the original conservation pool of this reservoir or reservoir component of this system?:	N	N	N	N	N	N
28	Additional comments about this reservoir or reservoir component of this system:	N	N	N	N	N	N
29	Decade	N	N	N	N	N	N
30	Source System Availability: Firm Yield	N	N	N	N	N	N

[1]This field is required when certain values are selected from the **Methodology used to determine availability volumes** field. Please refer to Appendix # for further details.
[2]This field is visible, editable and required only when the **Source Name** is 'Other Aquifer.'
[3]This field is visible, editable and required only when **Is Total Availability based on firm yield?** equals 'N.'

	Label	Groundwater: Non-MAG (Without MAG Availability)			Surface Water: Local Supply		
		Visible	Editable	Required	Visible	Editable	Required
1	SourceId:	Y	N	N	Y	N	N
2	DbSoId:	Y	N	N	Y	N	N
3	Source Name:	Y	N	N	Y	N	N
4	Source Details:	Y	N	N	Y	N	N
5	Source Region:	Y	N	N	Y	N	N
6	Source County:	Y	N	N	Y	N	N
7	Source Basin:	Y	N	N	Y	N	N
8	Source Type:	Y	N	N	Y	N	N
9	Source Sub Type:	Y	N	N	Y	N	N
10	Is this an existing or future source?:	Y	N	N	Y	N	N
11	Is this source generally considered brackish or saline?:	Y	Y	Y	Y	Y	Y
12	Was Total Availability of the source reduced due to water quality considerations?:	Y	Y	Y	Y	Y	Y
13	Methodology used to determine availability volumes:	Y	Y	Y	Y	Y	Y
14	Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below:	Y	Y	C[1]	Y	Y	C[1]
15	If the source name is 'Other Aquifer' please list the aquifer name. If the aquifer name is unknown, please list 'Unknown':	C[2]	C[2]	C[2]	N	N	N
16	Is Total Availability based on firm yield?:	N	N	N	N	N	N
17	Additional comments about this source:	Y	Y	N	Y	Y	N
18	Decade	Y	N	N	Y	N	N
19	Total Availability	Y	Y	Y	Y	Y	Y
20	Firm Yield	N	N	N	N	N	N
21	MAG Availability	N	N	N	N	N	N
22	Non-MAG Availability	N	N	N	N	N	N
23	Additional comments about availability, including, if applicable, any comments about firm yield or MAG volumes:	Y	Y	N	Y	Y	N
24	System Name:	N	N	N	N	N	N
25	Reservoir Name:	N	N	N	N	N	N
26	Is this reservoir or reservoir component of this system associated with a federal facility, or water right owned or controlled by a federal agency (e.g. dam owned or reservoir operated by a federal agency)?:	N	N	N	N	N	N
27	What is the original conservation pool of this reservoir or reservoir component of this system?:	N	N	N	N	N	N
28	Additional comments about this reservoir or reservoir component of this system:	N	N	N	N	N	N
29	Decade	N	N	N	N	N	N
30	Source System Availability: Firm Yield	N	N	N	N	N	N

[1]This field is required when certain values are selected from the **Methodology used to determine availability volumes** field. Please refer to Appendix # for further details.
[2]This field is visible, editable and required only when the **Source Name** is 'Other Aquifer.'
[3]This field is visible, editable and required only when **Is Total Availability based on firm yield?** equals 'N.'

	Label	Surface Water: Run-of-River			Surface Water: Reservoir		
		Visible	Editable	Required	Visible	Editable	Required
1	SourceId:	Y	N	N	Y	N	N
2	DbSold:	Y	N	N	Y	N	N
3	Source Name:	Y	N	N	Y	N	N
4	Source Details:	Y	N	N	Y	N	N
5	Source Region:	Y	N	N	Y	N	N
6	Source County:	Y	N	N	Y	N	N
7	Source Basin:	Y	N	N	Y	N	N
8	Source Type:	Y	N	N	Y	N	N
9	Source Sub Type:	Y	N	N	Y	N	N
10	Is this an existing or future source?:	Y	N	N	Y	N	N
11	Is this source generally considered brackish or saline?:	Y	Y	Y	Y	Y	Y
12	Was Total Availability of the source reduced due to water quality considerations?:	Y	Y	Y	Y	Y	Y
13	Methodology used to determine availability volumes:	Y	Y	Y	Y	Y	Y
14	Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below:	Y	Y	C[1]	Y	Y	C[1]
15	If the source name is 'Other Aquifer' please list the aquifer name. If the aquifer name is unknown, please list 'Unknown':	N	N	N	N	N	N
16	Is Total Availability based on firm yield?:	N	N	N	Y	Y	Y
17	Additional comments about this source:	Y	Y	N	Y	Y	N
18	Decade	Y	N	N	Y	N	N
19	Total Availability	Y	Y	Y	Y	Y	Y
20	Firm Yield	N	N	N	C[3]	C[3]	C[3]
21	MAG Availability	N	N	N	N	N	N
22	Non-MAG Availability	N	N	N	N	N	N
23	Additional comments about availability, including, if applicable, any comments about firm yield or MAG volumes:	Y	Y	N	Y	Y	N
24	System Name:	N	N	N	Y	N	N
25	Reservoir Name:	N	N	N	Y	N	N
26	Is this reservoir or reservoir component of this system associated with a federal facility, or water right owned or controlled by a federal agency (e.g. dam owned or reservoir operated by a federal agency)?:	N	N	N	Y	Y	Y
27	What is the original conservation pool of this reservoir or reservoir component of this system?:	N	N	N	Y	Y	Y
28	Additional comments about this reservoir or reservoir component of this system:	N	N	N	Y	Y	N
29	Decade	N	N	N	N	N	N
30	Source System Availability: Firm Yield	N	N	N	N	N	N

[1]This field is required when certain values are selected from the **Methodology used to determine availability volumes** field. Please refer to Appendix # for further details.
[2]This field is visible, editable and required only when the **Source Name** is 'Other Aquifer.'
[3]This field is visible, editable and required only when **Is Total Availability based on firm yield?** equals 'N.'

	Label	Surface Water: System			Reuse: Direct Reuse		
		Visible	Editable	Required	Visible	Editable	Required
1	SourceId:	Y	N	N	Y	N	N
2	DbSoId:	Y	N	N	Y	N	N
3	Source Name:	Y	N	N	Y	N	N
4	Source Details:	Y	N	N	Y	N	N
5	Source Region:	Y	N	N	Y	N	N
6	Source County:	Y	N	N	Y	N	N
7	Source Basin:	Y	N	N	Y	N	N
8	Source Type:	Y	N	N	Y	N	N
9	Source Sub Type:	Y	N	N	Y	N	N
10	Is this an existing or future source?:	Y	N	N	Y	N	N
11	Is this source generally considered brackish or saline?:	Y	Y	Y	Y	Y	Y
12	Was Total Availability of the source reduced due to water quality considerations?:	Y	Y	Y	Y	Y	Y
13	Methodology used to determine availability volumes:	Y	Y	Y	Y	Y	Y
14	Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below:	Y	Y	C[1]	Y	Y	C[1]
15	If the source name is 'Other Aquifer' please list the aquifer name. If the aquifer name is unknown, please list 'Unknown':	N	N	N	N	N	N
16	Is Total Availability based on firm yield?:	Y	Y	Y	N	N	N
17	Additional comments about this source:	Y	Y	N	Y	Y	N
18	Decade	Y	N	N	Y	N	N
19	Total Availability	Y	Y	Y	Y	Y	Y
20	Firm Yield	C[3]	C[3]	C[3]	N	N	N
21	MAG Availability	N	N	N	N	N	N
22	Non-MAG Availability	N	N	N	N	N	N
23	Additional comments about availability, including, if applicable, any comments about firm yield or MAG volumes:	Y	Y	N	Y	Y	N
24	System Name:	Y	N	N	N	N	N
25	Reservoir Name:	Y	N	N	N	N	N
26	Is this reservoir or reservoir component of this system associated with a federal facility, or water right owned or controlled by a federal agency (e.g. dam owned or reservoir operated by a federal agency)?:	Y	Y	Y	N	N	N
27	What is the original conservation pool of this reservoir or reservoir component of this system?:	Y	Y	Y	N	N	N
28	Additional comments about this reservoir or reservoir component of this system:	Y	Y	N	N	N	N
29	Decade	Y	N	N	N	N	N
30	Source System Availability: Firm Yield	Y	Y	Y	N	N	N

[1]This field is required when certain values are selected from the **Methodology used to determine availability volumes** field. Please refer to Appendix # for further details.
[2]This field is visible, editable and required only when the **Source Name** is 'Other Aquifer.'
[3]This field is visible, editable and required only when **Is Total Availability based on firm yield?** equals 'N.'

	Label	Reuse: Indirect Reuse		
		Visible	Editable	Required
1	SourceId:	Y	N	N
2	DbSoId:	Y	N	N
3	Source Name:	Y	N	N
4	Source Details:	Y	N	N
5	Source Region:	Y	N	N
6	Source County:	Y	N	N
7	Source Basin:	Y	N	N
8	Source Type:	Y	N	N
9	Source Sub Type:	Y	N	N
10	Is this an existing or future source?:	Y	N	N
11	Is this source generally considered brackish or saline?:	Y	Y	Y
12	Was Total Availability of the source reduced due to water quality considerations?:	Y	Y	Y
13	Methodology used to determine availability volumes:	Y	Y	Y
14	Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below:	Y	Y	C[1]
15	If the source name is 'Other Aquifer' please list the aquifer name. If the aquifer name is unknown, please list 'Unknown':	N	N	N
16	Is Total Availability based on firm yield?:	N	N	N
17	Additional comments about this source:	Y	Y	N
18	Decade	Y	N	N
19	Total Availability	Y	Y	Y
20	Firm Yield	N	N	N
21	MAG Availability	N	N	N
22	Non-MAG Availability	N	N	N
23	Additional comments about availability, including, if applicable, any comments about firm yield or MAG volumes:	Y	Y	N
24	System Name:	N	N	N
25	Reservoir Name:	N	N	N
26	Is this reservoir or reservoir component of this system associated with a federal facility, or water right owned or controlled by a federal agency (e.g. dam owned or reservoir operated by a federal agency)?:	N	N	N
27	What is the original conservation pool of this reservoir or reservoir component of this system?:	N	N	N
28	Additional comments about this reservoir or reservoir component of this system:	N	N	N
29	Decade	N	N	N
30	Source System Availability: Firm Yield	N	N	N

[1]This field is required when certain values are selected from the **Methodology used to determine availability volumes** field. Please refer to Appendix # for further details.
[2]This field is visible, editable and required only when the **Source Name** is 'Other Aquifer.'
[3]This field is visible, editable and required only when **Is Total Availability based on firm yield?** equals 'N.'

Appendix D: Source Types and Source Sub Types Matrix

The following matrix lists the source types and their corresponding sub types.

Source Type	Source Sub Type
Surface Water	Run-Of-River
Surface Water	Reservoir
Surface Water	System
Surface Water	Livestock Local Supply
Surface Water	Other Local Supply
Surface Water	Gulf of Mexico
Groundwater	Groundwater
Reuse	Direct Reuse
Reuse	Indirect Reuse

Appendix E: Methodology Used to Determine Total Availability Volumes Matrix

The following matrix lists the available values for the **Methodology used to determine Total Availability volumes** field, what types of sources should be associated with those values, if any additional information is required and the description of the additional information required. Additional information should be listed in the **Based on the requirements listed in the Guidelines for Data Deliverables, please enter related information about the methodology value chosen in the text box below** field in the DB17 application.

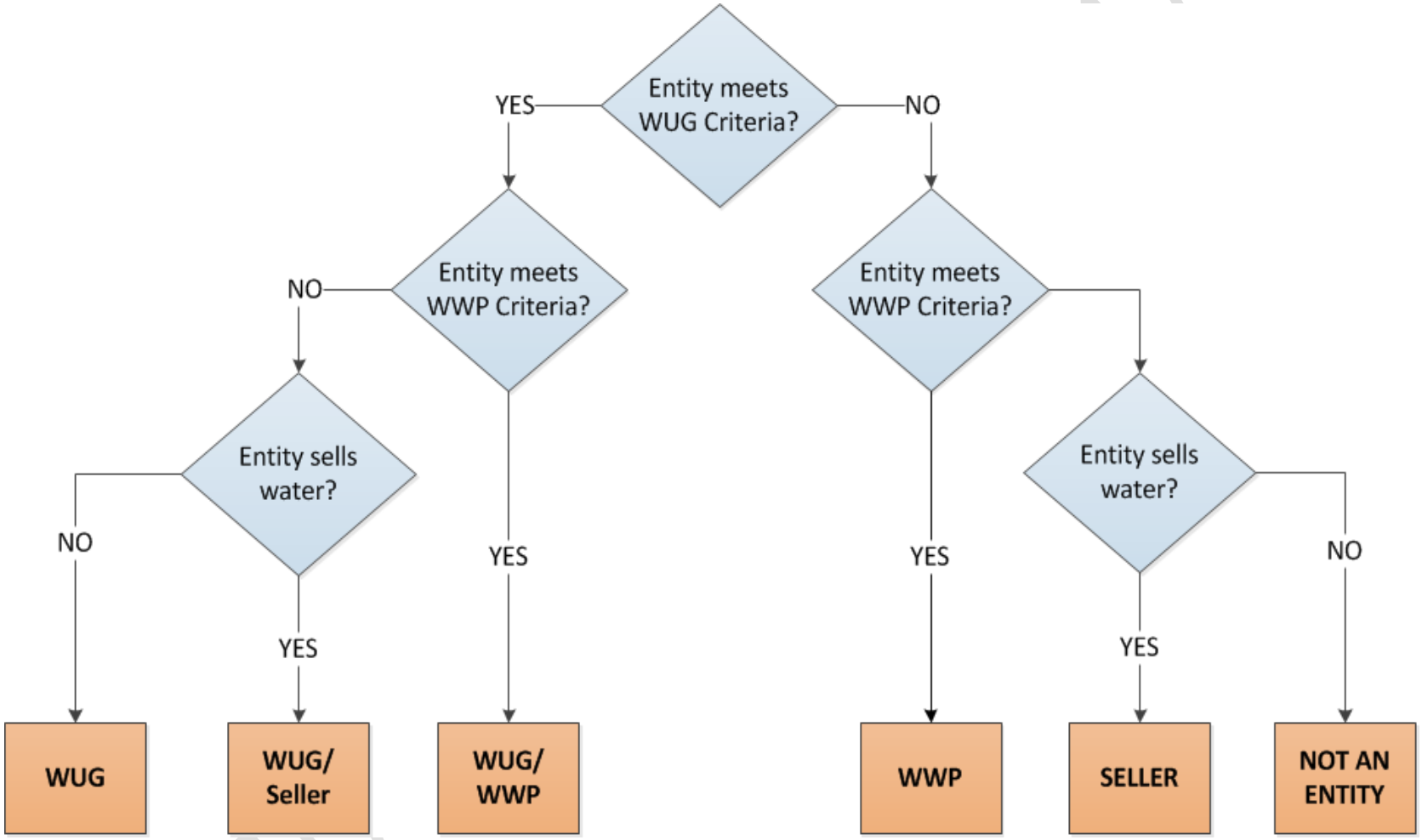
Methodology Used to Determine Total Availability Volumes	Source Type & Source Sub Type	Additional Information Required?	Description of Additional Information Required
Modeled Available Groundwater (MAG)	• Groundwater: MAG	N	
Groundwater Availability Model (GAM)	• Groundwater: Non-MAG (With MAG Availability) • Groundwater: Non-MAG (Without MAG Availability)	Y	Specify which model, whose model and the date.
Groundwater Availability Model (GAM) Modified	• Groundwater: Non-MAG (With MAG Availability) • Groundwater: Non-MAG (Without MAG Availability)	Y	Specify which model, whose model, the date, description of modification and EA approval date.
Effective Aquifer Recharge	• Groundwater: Non-MAG (With MAG Availability) • Groundwater: Non-MAG (Without MAG Availability)	N	Specify basis of recharge estimates.

Methodology Used to Determine Total Availability Volumes	Source Type & Source Sub Type	Additional Information Required?	Description of Additional Information Required
Availability Set to Demand	• Groundwater: Non-MAG (With MAG Availability) • Groundwater: Non-MAG (Without MAG Availability) • Surface Water: Livestock Local Supply • Surface Water: Other Local Supply • Reuse: Direct Reuse	N	Specify justification for setting availability equal to demand if demand is less than actual availability during drought of record conditions.
Published Reports/Data	• Groundwater: Non-MAG (With MAG Availability) • Groundwater: Non-MAG (Without MAG Availability) • Surface Water: Livestock Local Supply • Surface Water: Other Local Supply	Y	Name of report/dataset, who published the report/dataset and the date the report/dataset was published.
Livestock/Holding Tank Volume	• Surface Water: Livestock Local Supply • Surface Water: Other Local Supply	N	

Methodology Used to Determine Total Availability Volumes	Source Type & Source Sub Type	Additional Information Required?	Description of Additional Information Required
Permitted Amount	• Groundwater: Non-MAG (With MAG Availability) • Groundwater: Non-MAG (Without MAG Availability) • Reuse: Direct Reuse • Reuse: Indirect Reuse	N	
Diversion Infrastructure Capacity	• Surface Water: Run-of-River • Surface Water: Reservoir • Surface Water: System • Surface Water: Gulf of Mexico • Reuse: Direct Reuse • Reuse: Indirect Reuse	N	
Wastewater Treatment Plant Discharge	• Reuse: Direct Reuse • Reuse: Indirect Reuse	N	
Water Availability Model (WAM) Run 3	• Surface Water: Run-of-River • Surface Water: Reservoir • Surface Water: System	N	

Methodology Used to Determine Total Availability Volumes	Source Type & Source Sub Type	Additional Information Required?	Description of Additional Information Required
Water Availability Model (WAM) Run 3 Modified	• Surface Water: Run-of-River • Surface Water: Reservoir • Surface Water: System	Y	Specify which model, whose model, the date, description of modification, qualifier, and EA approval date.
Source is Not in Use	• All	N	
Other	• All	Y	Must provide a detailed description of the methodology used. If more than one of the methodologies are identified, any additional information listed previously in this table must also be included.

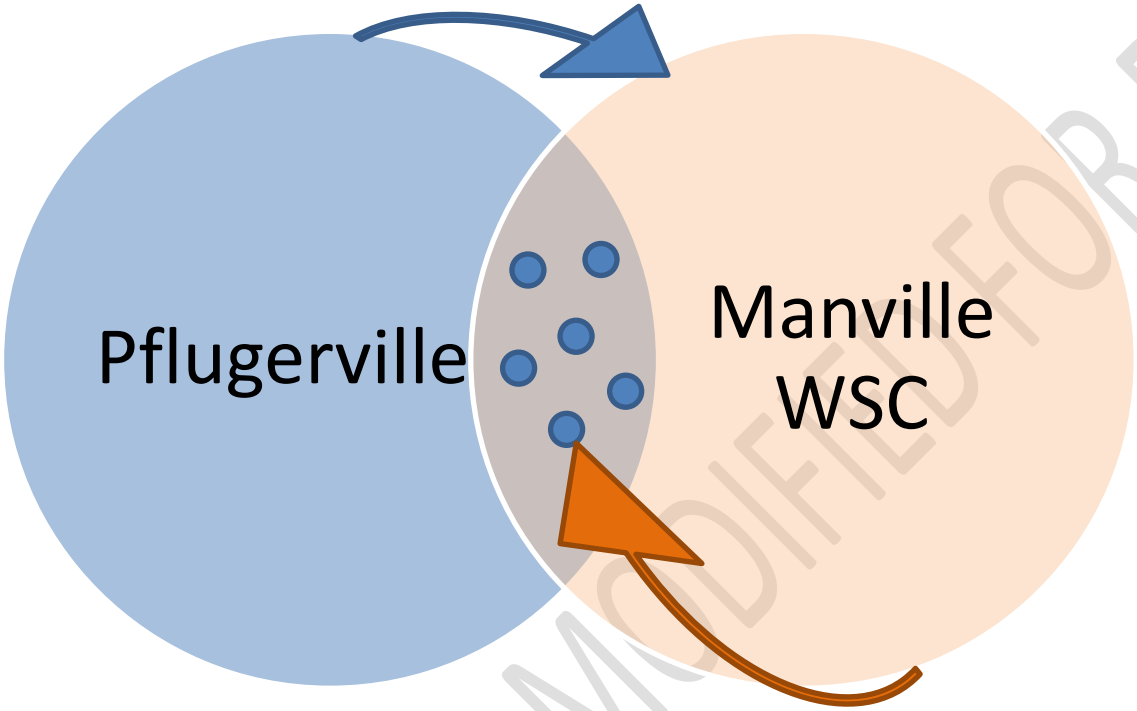
Appendix F: Entity Types



Appendix G: Entity Module Page Visibility by Entity Type

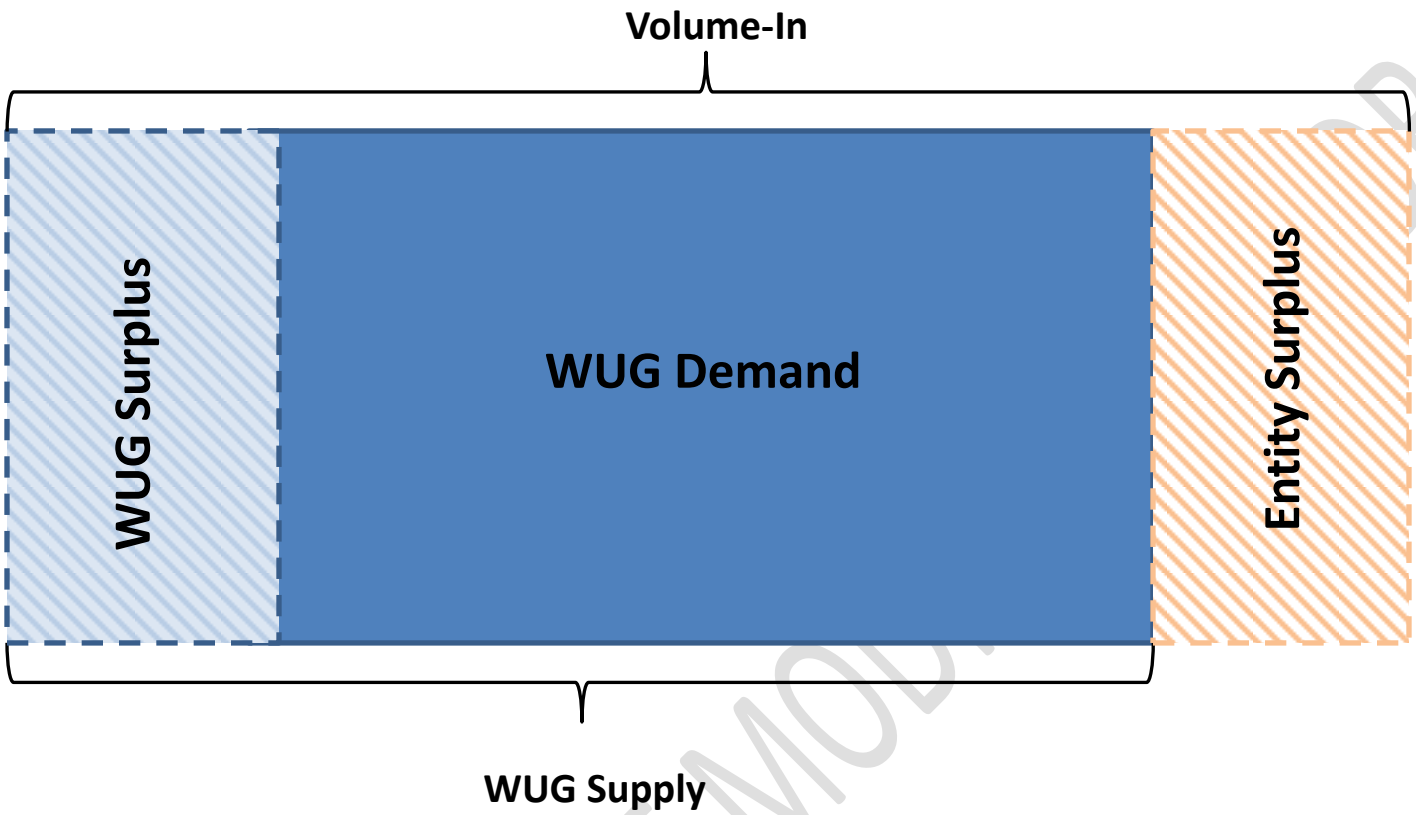
	Entity Types				
Entity Module Pages	WUG	WUG/WWP	WUG/Seller	WWP	Seller
Entity Description	X	X	X	X	X
WUG Projections	X	X	X		
Direct Source Volume-In	X	X	X	X	X
Entity Sales		X	X	X	X
WUG Supply	X	X	X		

Appendix H: Wholesale/Retail Example

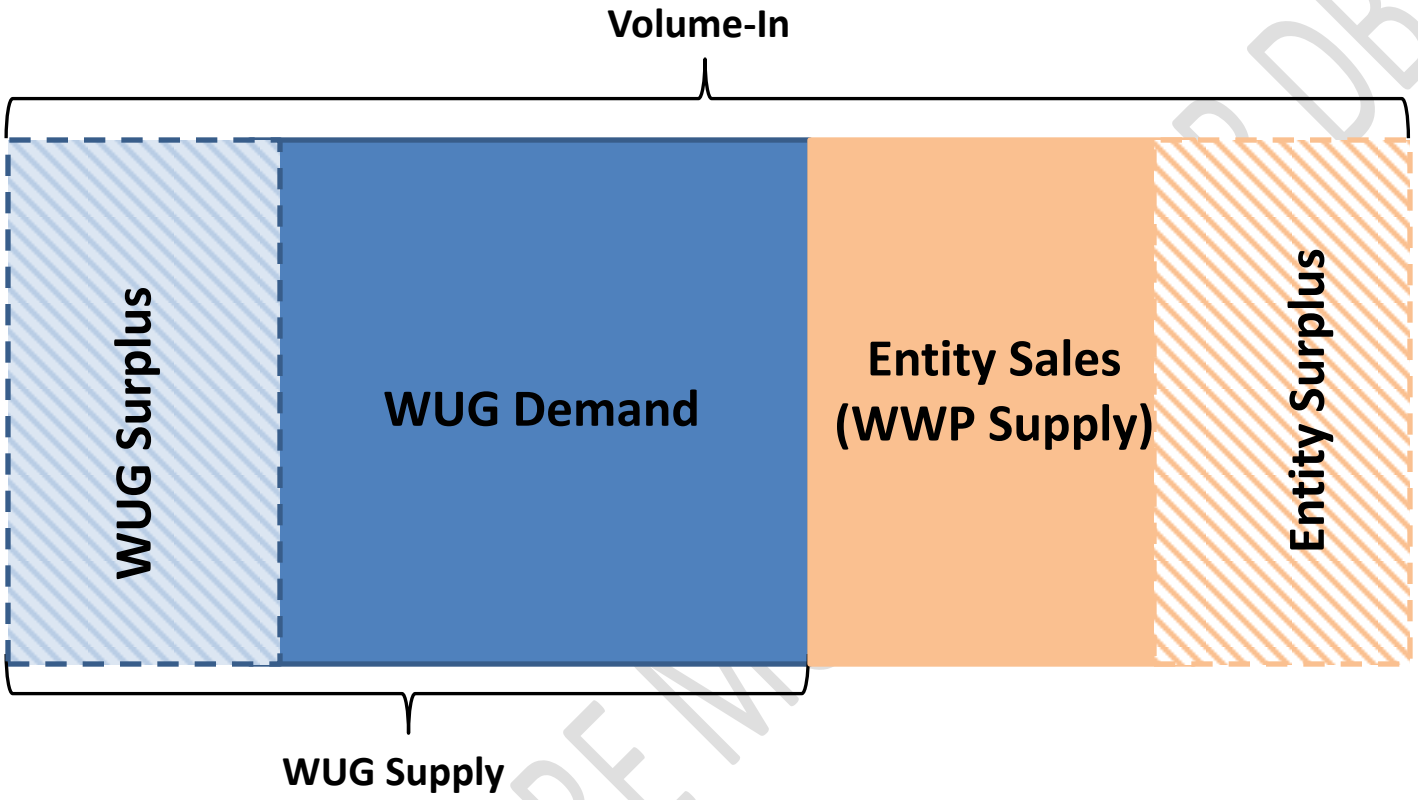


*Pflugerville sells water wholesale to Manville WSC. Manville WSC sells water to individual connections within its service area, located within the entity Pflugerville's population boundary.

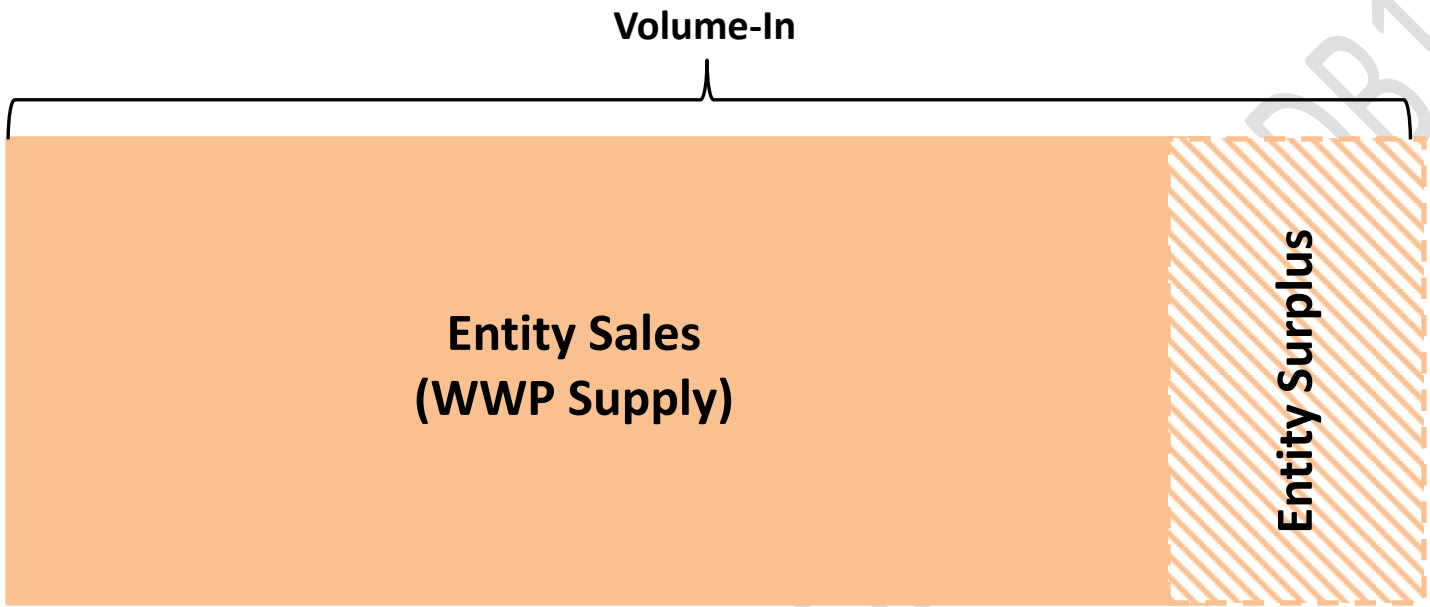
Appendix I: Water Volumes by WUG Entity Type



Appendix J: Water Volumes by WUG/WWP or WUG/Seller Entity Types



Appendix K: Water Volumes by WWP or Seller Entity Types



Appendix L: Entity Water Volume Tier Structure